From *Armenian Kars and Ani*,
Volume 10 in the series *Historic Armenian Cities and Provinces*,
edited by Richard G. Hovannisian (Costa Mesa, 2011),
Chapter 6, pp. 101-126.

❀ 6 ❀

THE ARCHITECT TRDAT:
FROM THE GREAT CHURCH AT ANI TO THE GREAT CHURCH AT CONSTANTINOPLE

Christina Maranci

The region of Ani is home to a group of structures built by the celebrated Armenian architect Trdat. Known to both historians of Byzantine and Armenian architecture because of the bicultural nature of his works, Trdat (Tiridates) is credited with the repair of the dome of the Hagia Sophia (Holy Wisdom Cathedral) in Constantinople and with the construction of the cathedral of Ani (989-1001), one of the best-known medieval monuments of the Caucasus.[1] As a highly-regarded builder in Armenia, Trdat was also entrusted with the construction of

[1] It is almost universally accepted that it was the same "Trdat" who undertook both works. The evidence is as follows: an architect named Trdat is mentioned in two sections of the *Universal History* of Stepanos Taronetsi, once in connection with Hagia Sophia and later in connection with the cathedrals of Argina and Ani. Although it is conceivable that Stepanos was writing about two different individuals with the same name, the argument for a single persona is much more inviting. First, the "Trdat" responsible for the cathedrals of Argina and Ani was already a noted builder in Armenia prior to the collapse of the dome of Hagia Sophia. It is certain that he constructed the patriarchal cathedral of Argina before 989 and most likely had begun work on the Ani cathedral as well. Hence, he would have been of the appropriate status for an imperial project. Second, an inscription on the south wall of the cathedral of Ani indicates that the Bagratuni king Smbat II died in 989 and that construction was completed in 1001 under Queen Katranide. The death of Smbat could have created a hiatus in building at the precise time when Trdat was presumably in Constantinople. Finally, it seems doubtful that two high-level architects named Trdat working in tenth-century Armenia would be mentioned in the same source without differentiation. Armenian sources of the era (like their Byzantine counterparts) rarely give the names of architects (the case of Manuel, the architect of Aghtamar, is one of the few exceptions). In this regard, it is noteworthy to consider Hrachia Acharian's *Hayots andznanunneri bararan* [Dictionary of Armenian Proper Names] (Beirut: Sevan, 1972), a five-volume reference culled from classical and medieval sources. In that work, the name "Trdat" appears only once in the tenth century.

Trdat's Buildings, at Google Images.

the patriarchal cathedral of Argina (circa 985) and the palace chapel of King Gagik I (circa 1001-05). The main churches at the monasteries of Marmashen, Sanahin, and Haghbat, all from the second half of the tenth century, have also been attributed to him. Such high-level projects seem to have earned Trdat unusual celebrity, and he is one of the few medieval architects mentioned by name in contemporary sources.

The abundant literature on this figure is, perhaps predictably, asymmetrical. Armenological studies tend to focus on his building projects in the Caucasus, mentioning his efforts at the Great Church in Constantinople only in passing.[2] On the other hand, scholars of Byzantine architecture, although cognizant of his activity in Ani, often neglect his constructions in Armenia; some seem unaware that he enjoyed a career there at all.[3] This historiographical bifurcation, the result, one

---

[2] For a book-length monograph on Trdat, see Konstantin Hovhannisyan, *Zodchii Trdat* [The Architect Trdat] (Erevan: Academy of Sciences, 1951). Recent works include Patrick Donabédian, "Le point sur l'architect arménien Trdat-Tiridate," *Cahiers archéologiques* 39 (1991): 95-10, and Christina Maranci, "The Architect Trdat: Building Practices and Cross-Cultural Exchange in Byzantium and Armenia," *Journal for the Society of Architectural Historians* 62:3 (2003): 294-305. See also "Trdat," *Haykakan Sovetakan Hanragitaran* [Armenian Soviet Encyclopedia], vol. 12 (Erevan: Academy of Sciences, 1986), p. 93; Lucy Der Manuelian, "Trdat," *Dictionary of the Middle Ages* (New York: American Council of Learned Societies, 1982), pp. 164-65. Discussions also appear in the following works: Sedrak Barkhudaryan, *Mijnadaryan hay chartarapetner ev kargorts varpetner* [Medieval Armenian Architects and Stonemasons] (Erevan: Armenian Literature and Art Publishers, 1963); Toros Toramanyan, *Nyuter haykakan chartarapetutyan patmutyan* [Materials for the History of Armenian Architecture], ed. Hovsep Orbeli, 2 vols. (Erevan: Armfani, 1942-1948), vol. 1, pp. 68, 74, 275-76, 385; Josef Strzygowski, *Die Baukunst der Armenier und Europa* (Vienna: Anton Schroll & Co., 1918), pp. 590-95; Sirarpie Der Nersessian, *The Armenians* (New York: Thames and Hudson, 1969), pp. 108-10; Jean-Michel Thierry and Patrick Donabédian, *L'art arménien* (Paris: Éditions Mazenod, 1987), p. 484. See also Garbis Armen, *An Architecture of Survival* (Ottawa: G. Armen, 1992), pp. 47-50, in which the author contends that Trdat reconstructed the entire dome and hence attributes to him the "innovations" of the pier buttresses and the dome ribs. These elements, however, were already in place in the sixth century with the second dome of Isidorus the Younger.

[3] For example, William Emerson and Robert Van Nice, whose studies of Trdat's repair of Hagia Sophia are discussed below, make no mention of his Armenian constructions. There are exceptions, however: Mango and Krautheimer cite Trdat's work in Armenia (although they focus on his activities in Byzantium). See Cyril Mango, *Byzantine Architecture* (New York: Rizzoli, 1985), p. 130; Richard Krautheimer and Slobodan Ćurčić, *Early Christian and Byzantine Architecture,* 4th ed. rev. (Harmondsworth and New York: Penguin, 1986), p. 330. Trdat's works in Armenia are also discussed briefly in a more recent study of Byzantine architecture by Robert

may argue, of both the divergent character of the Byzantine and Armenian sources and persistent cultural and national myopia, has limited our understanding of the architect.[4]

In exploring the historical circumstances surrounding Trdat's Constantinopolitan commission, this report considers what he may have brought from one culture to another, raising the broader question of how Byzantines and Armenians perceived each other's architectural traditions. A study of Trdat's case also offers critical information regarding medieval building practices. Clues to his design process and on-site construction methods are furnished in both a contemporary text and in surviving monuments. This evidence, it should be stressed, is particularly significant, for direct commentary on this subject is very scarce in medieval sources.[5] Although hitherto largely overlooked, the career of Trdat can provide an important resource for both the study of cross-cultural exchange and building practices in medieval architecture. Such an inquiry will also furnish some new perspectives on a group of very familiar monuments.

Trdat and Hagia Sophia: Textual and Archaeological Data

What is the evidence for Trdat's involvement with the celebrated Church of the Hagia Sophia? (Fig. 1). Numerous Byzantine sources report on the devastation of the earthquake of 989, the collapse of the dome of Hagia Sophia, and its subsequent repair under Emperor Basil II (985-1025).[6] However, none mentions the builder involved in the

---

Ousterhout, *Master Builders of Byzantium* (Princeton: Princeton University Press, 1999), pp. 56, 273n49.

[4] For further discussion of the problem of nationalist ideology in the literature on Armenian architecture, see Christina Maranci, *Medieval Armenian Architecture: Constructions of Race and Nation* (Louvain: Peeters, 2001).

[5] Robert Ousterhout has shown in *Master Builders of Byzantium*, p. 59, that chronicles, military treatises, and most particularly saints' lives offer an important and overlooked resource for this line of inquiry.

[6] Byzantine sources that mention the earthquake include Leodiaconus, Scylitzes, and Glykas. The episode is also mentioned by an Arab text (Yahya-ibn-Sa'id). The Armenian account of Stepanos Taronetsi is discussed below. For a complete list of texts, analyses, and further references, see Cyril Mango, "Byzantine Writers on the Fabric of Hagia Sophia," in *Hagia Sophia from the Age of Justinian to the Present*, ed. Robert Mark and Ahmet S. Çakmak (Cambridge and New York: Cambridge University Press, 1992), p. 54; idem, *The Mosaics of St. Sophia at Istanbul* (Washington, DC: Dumbarton Oaks, 1962), p. 77.

project; it is in an early eleventh-century Armenian source, the *Universal History* of Stepanos Taronetsi,[7] that his identity is offered. The last of the three-volume work describes Byzantine-Armenian relations during the reign of Basil II[8] and also mentions the earthquake in Constantinople and the repair of Hagia Sophia. After describing the damage done to a number of structures in the city and its vicinity, Taronetsi relates the condition of the church:

> . . . and even [Hagia] Sophia, the cathedral, was torn to pieces from top to bottom. On account of this, many skillful workers among the Greeks tried repeatedly to reconstruct it. The architect and stonemason Trdat of the Armenians also happened to be there, presented a plan, and with wise understanding prepared a model, and began to undertake the initial construction, so that [the church] was rebuilt more handsomely than before.[9]

Taronetsi's text may contain an element of encomium: after local builders struggle and ultimately fail to arrive at a solution, Trdat conceives and executes—with little evident hardship—a successful repair of the dome. Most interesting in this respect is the use of the verb

---

[7] Taronetsi was active in the early eleventh century. Otherwise known as Asoghik, the author came from the province of Taron, southwest of Lake Van (present-day southeast Turkey) and was appointed by Catholicos Sargis (992-1019) to supervise monasteries and churches. It was Sargis who commissioned Taronetsi to write the *History*, a three-book account, which begins with lists of biblical kings and proceeds in the second and third books to name rulers of the Byzantine, Sasanian, and Islamic empires. The critical edition of the text remains Stepan Malkhasiants, *Stepanosi Taronetsvoy Patmutiun Tiezerakan* [Universal History of Stepanos Taronetsi] (St. Petersburg: I.N. Skorokhodov, 1885). Several translations exist in French, including Edouard Dulaurier, *Histoire universelle par Étienne Asoghik de Taron* (Paris: Leroux, 1883) (book 1 of the *History*), and Frédéric Macler, *Etienne Asolik de Taron: Histoire Universelle* (Paris: Leroux, 1883-1917, 1920) (books 2-3), which is also printed in *Publications de l'école des langues orientales vivantes*, 1[e] série, 18 (1920). In German, see Heinrich Gelzer and August Burckhardt, *Stephanos von Taron, Armenische Geschichte* (Leipzig: B.G. Teubner, 1907). For secondary literature, see Robert Thomson, *A Bibliography of Classical Armenian Literature to 1500 AD* (Brepols: Turnhout 1995), pp. 202-03.

[8] Robert Thomson, "Asoghik," *Oxford Dictionary of Byzantium*, 3 vols. (New York and Oxford: Oxford University Press, 1991), vol. 2, p. 209.

[9] *Վասն որոյ բազում ջան եղեւ արհեստաւոր ճարտարացն Յունաց առ ի վերստին նորոգել: Այլ անդ դիպեալ ճարտարապետին Հայոց Տրդատայ քարագործի՝ տայ զօրինակ շինուածոյն, իմաստուն հանճարով պատրաստեալ գվարպարս կազմածոյն եւ սկզբնաւորեալ գշինելն. որ եւ գեղեցկապէս շինեցաւ պայծառ քան զառաջինն:* (Malkhasiants, Stepanos Taronetsi, *Patmutiun Tiezerakan*, pp. 28, 250-51).

dipim (to happen, arrive by chance, match, suit). Hence, a literal reading would suggest that Trdat happened to be in Constantinople at the time of the dome's collapse, an interpretation running counter to the commonly held idea that he was summoned.[10] The verb may have also been used, however, to emphasize further the casual nature of Trdat's victory over the hapless Byzantine architects. Regardless, for the present purposes, the basic units of historical narrative can be set out as follows: Trdat was in Constantinople when the dome collapsed, made preparatory studies of the repair, and undertook the beginning stages of work.

More specific information regarding Trdat's interventions has been one of the aims of archaeological surveys by William Emerson and Robert Van Nice.[11] In a series of publications of the 1940s and 1950s, the two scholars presented the results of their examinations, offering a detailed account of the construction of Hagia Sophia's second dome by Isidorus the Younger and subsequent repairs of the tenth and fourteenth centuries. Although now more than a half-century old, their observations have never been seriously challenged.[12] The scholars located Trdat's contribution based on a combination of information from the Byzantine sources and their physical observations of the structure; they concluded that his repair comprised the replacement of the western segment of the dome and the reinforcement of the western arch of the four great arches supporting the dome (Fig. 2). First, Emerson and Van Nice noted that in this area, the ribs radiating from the center of the dome are filled in to form a solid surface. This surface, moreover, is not curved, as elsewhere along the dome base, but conspicuously straight (Fig. 3). After an inspection of exposed masonry at the interior base of the dome, they concluded that this apparent irregularity was the result of the widening of the great western arch, which was built to protrude farther into the dome area than its predecessor had. Trdat, the

[10] See, for example, Der Nersessian, *The Armenians*, p. 108. This passage also raises questions about the interruption of building at the cathedral of Ani (discussed below).

[11] See William Emerson and Robert L. Van Nice, "Hagia Sophia, Istanbul: Preliminary Report of a Recent Examination of the Structure," *American Journal of Archaeology* 47:4 (1943): 403-65, and "Hagia Sophia: The Construction of the Second Dome and Its Later Repairs," *Archaeology*, 4, no. 13 (1951): 163-71; Rowland Mainstone, *Hagia Sophia: Architecture, Structure and Liturgy of Justinian's Great Church* (New York: Thames and Hudson, 1988).

[12] For example, the authors in Mark and Çakmak, *Hagia Sophia*, make use of these surveys with little revision.

two believe, also increased the height of the arch, as is evident from the mass which projects above the roofline of the west side of the dome base.[13] This exterior projection curves inward towards the dome at its center point.[14] This inward cambering, according to the scholars, was intentional: the result of Trdat's study of the south side of the dome, surviving in its sixth-century state. The authors contend that in the sixth century, as now, this side of the dome bore a visible outward bulge.[15] Hence, they assert, it is most likely that Trdat intended to safeguard against a similar deformation on the west side.

The Building Practices of Trdat: Explanations for His Hire

Although the archaeological aspects of Trdat's repair have been carefully examined, the historical circumstances surrounding the event remain unclear. It would be particularly interesting to know how Trdat earned such a prestigious commission, a job for which, the Byzantine historian Scylitzes claims, the scaffolding alone cost one thousand pounds of gold.[16] At that point in his career, Trdat had already built a cathedral for the reigning catholicos of Armenia, and it is quite possible that his reputation preceded him. Yet, one would imagine, hiring a local architect would have been more practical.

Further answers to this question may be sought in the historical context of the latter tenth century. Basil's concern with expanding imperial borders into the Balkans and Armenia and the Caucasus often kept him away from the capital, and, unlike his namesake Basil I, he is not known to have commissioned any major architectural projects there.[17] Although it is dangerous to draw firm conclusions given the piecemeal nature of the evidence, it is perhaps significant that no monuments from his reign survive in Constantinople.[18] Moreover, Basil's eastward campaigns probably brought him in direct contact

---

[13] Emerson and Van Nice, "Hagia Sophia: Second Dome," fig. 9.

[14] This cambering, however, is related to the question of whether the semi-domes affected the stability of the main dome; on this issue, see the comments of Rowland Mainstone, in which, based on evidence from Italian and Syrian examples, he affirms that they worked as buttresses (*Hagia Sophia: Justinian's Great Church*, p. 172).

[15] Emerson and Van Nice, "Hagia Sophia: Second Dome," fig. 2.

[16] Mango, "Byzantine Writers on the Fabric of the Hagia Sophia," p. 54.

[17] "Basil II," *Oxford Dictionary of Byzantium*, vol. 1, p. 261.

[18] There is ample physical evidence, of course, for concomitant construction elsewhere in the empire.

with Armenian builders. A number of sources report on Basil's interaction with Armenians; according to the chronicle of Matthew of Edessa, for example, he met with Armenian philosophers during his campaigns in the east.[19]

While these factors suggest a possible scenario in which Trdat was drawn to the capital, they leave a number of problems unaddressed. He was not, most likely, an expert in building Byzantine churches, and the brick and mortar of Byzantine structures surely constituted an important technical departure from the stone-faced rubble masonry of Armenia and Georgia. There, churches such as the cathedral of Ani were sheathed with thin slabs facing a core of fieldstones and mortar, materials which necessitated a different system of vault construction.[20] Yet if Trdat was not chosen for his mastery of Byzantine materials and techniques, an examination of his repair of Hagia Sophia also shows little evidence of architectural techniques borrowed from Armenia. The cladding of Armenian monuments, formed by carefully-cut, well-squared stones, would no doubt have struck a Byzantine spectator as distinctive, and hence one might expect to find such masonry in Trdat's repair. As Van Nice and Emerson have noted, however, the stonework of the western portion of cornice of Hagia Sophia is marked by a striking lack of uniformity. Unlike the other segments, which feature a consistency in the size of the blocks, Trdat's portion is composed of varying sizes and shapes.

What, then, recommended Trdat in particular for the job? One potentially attractive aspect of Trdat's curriculum vitae was his experience with dome construction, and in particular, with domes supported by pendentives—sections of triangular spheres forming the corners of a square bay—as is employed at the Hagia Sophia (see Fig. 3, lower right). In Armenia, by contrast, the typical method of dome support featured squinches, or conical sections thrown across the corners of the bay, creating an octagonal base for the dome drum. Yet, it is noteworthy that by the tenth century, pendentives are more frequently used in

---

[19] See *Armenia and the Crusades, Tenth to Twelfth Centuries: The Chronicle of Matthew of Edessa,* trans. and comm. Ara E. Dostourian (Lanham, MD: University Press of America, 1993), pp. 39-47.

[20] Discussions of Talin and of other medieval Armenian monuments can be found in Sirarpie Der Nersessian, *L'art arménien*; Paolo Cuneo et al., eds., *Architettura armena dal quarto al diciannovesimo secolo* (Rome: De Luca, 1988). The most comprehensive, albeit problematic, study remains Josef Strzygowski, *Die Baukunst der Armenier und Europa.*

Armenian architecture and that all the Armenian monuments attributed to Trdat utilize pendentives beneath the domes.[21] Another aspect of Trdat's architectural skills is revealed in Taronetsi's account. In describing Trdat's selection for the job, the author does not offer generic praise but rather connects the architect's success specifically to the use of preparatory studies. Surprisingly, Taronetsi cites not one but two forms: Trdat "presented a plan [*orinak*], with wise understanding prepared a model [*kaghabar*], and began to undertake the initial construction." The term *orinak* is generally defined as *type* or *model*; however, in its secondary meaning, it possesses more specific associations with graphic media and in particular with drawings and plans.[22] *Kaghabar*, by contrast, refers to a three-dimensional medium, carrying the meaning of *cast*, *shape*, or *mold*.[23] Hence, it is possible to infer from Taronetsi's account that Trdat produced both graphic and plastic studies in preparation for his repair.

Such a design process as this finds no parallel description elsewhere in medieval Armenian texts. In the *History of the Armenians* by Agathangelos, dated to the fifth century, Saint Gregory lays out the foundations of martyria with an architect's line (*lar*): "Saint Gregory himself took up the architect's line and set out the foundations for the saint's chapels of repose."[24] The same phrase is used in the tenth-century *History of the House of the Artsrunik* to describe the founding of the palace complex at Aghtamar (Akhtamar): "Then [Gagik] in his wise understanding, with many artisans took up the architect's line, to measure and sketch and indicate at the foot of the mountain."[25] This method is also mentioned in the Armenian church foundation rite, in which the bishop "takes out the architect's measuring line" to mark out the perimeter of the foundation, a practice which suggests that the buildings were laid out on-site with ropes, a practice for which Robert Ousterhout has adduced numerous parallels in Byzantium and medie-

---

[21] These include the cathedrals of Argina, Ani, and Gagkashen, which are associated with Trdat via literary sources. The main churches at Sanahin, Haghbat, and Marmashen, which are tentatively attributed to him, also bear pendentive domes.

[22] See Matthias Bedrossian, *New Dictionary, Armenian-English,* 2d ed. (Beirut: Librairie du Liban, 1985), p. 762.

[23] Ibid., p. 321.

[24] *Agathangelos: History of the Armenians*, trans. Robert W. Thomson (Albany: State University of New York Press, 1976), p. 297, §758.

[25] Thomas Artsruni, *History of the House of the Artsrunik'*, trans. and comm., Robert W. Thomson (Detroit: Wayne State University Press, 1985), p. 356, §294.

val Europe.[26] The literary tradition of medieval Georgia, Armenia's neighbor to the north, offers similar evidence: the eleventh-century source Eprem Mcire relates that Nino, the illuminator of Georgia, drew the plan of a church that was then built by architects and masons.[27]

The uniqueness of Taronetsi's text may be explained in a number of ways, but it is first important to note that the medieval Armenian accounts of the foundation of churches belong to a well-established literary tradition, and the events described above are embedded in a larger hagiographical narrative. In this light, it is significant that the author of the *History of the House of the Artsrunik* employs precisely the same phrase "to take up the architect's line," as his fifth-century predecessor. It is thus tempting to assert the veracity of Taronetsi's text based on its distinctness from the literary conventions and, more particularly, in its use of technical and differentiated terms. Yet such an assertion must be predicated on a comprehensive analysis of building practices in medieval Armenia and the Caucasus, which has not yet been ventured, apart from studies of churches in the region of Tao/Tayk.[28]

With regard to the use of architectural models, it is important to consider a fascinating corpus of miniature stone buildings dating from the seventh to fourteenth centuries which survive in Armenia and Georgia. Generally ranging in height from one to three feet, they assume the shape of the domed, centrally-planned churches characteristic of the medieval Caucasus and occur in a variety of contexts.[29] They

---

[26] See Robert Thomson, "Architectural Symbolism in Classical Armenian Literature," *Journal of Theological Studies* 30 (1979): 109; Ousterhout, *Master Builders*, p. 60.

[27] Wachtang Djobadze, "The Georgian Churches of Tao-Klarjet'i: Construction Methods and Materials," *Oriens Christianus* 62 (1978): 114-34, and Ousterhout's discussion in *Master Builders*, pp. 69-70. It would be interesting to explore the relationships between literary *topoi* and in actual building practices in Armenia and Georgia.

[28] Taronetsi's text is particularly striking in this regard, because it suggests the concomitant use of model and plan in the design process; in medieval sources on architectural planning, only one medium is usually mentioned. See Paolo Cuneo, "Les modèles en pierre de l'architecture arménienne," *Revue des études arméniennes*, n.s., 8 (1971): 201-31. However, the very schematic form of the representatives of this group, often characterized simply by a cubic stone capped by a hemisphere, could hardly have been useful in such a context.

[29] For secondary literature on this phenomenon, see Cuneo, "Les modèles en pierre,"; *Armenia Sacra: Mémoire chrétienne des Arméniens (IV^e^-XVIII^e^ siècles)*, ed. Jannic Durand, Ioanna Rapti, and Dorota Giovannoni (Paris: Musée de Louvre Éditions, 2007), p. 89 (cat. no. 17) and pp. 145-47 (cat. nos. 38-40); and most recently

frequently appear in relief sculptures depicting a building donor holding a model of his church, as in the famous example at the tenth-century church of Aghtamar. The models also functioned as acroteria, or small objects crowning the apex of architectural gables, and in this role can be found on the rooftops of many monastery churches in Armenia, such as that of Haghbat. They also may have served as containers, either of relics or eucharistic wafers, as an example from the monastery of Sanahin suggests.[30] A number of them, however, do not seem to be connected with a particular monument, and hence they have been considered as workshop models. However, in view of the very schematic form of the representatives of this group, often characterized simply by a cubic stone capped by a hemisphere, it is doubtful that they would have aided much in the design process. It is more likely that such models were used for the purposes of presentation.[31] In any case, this body of sculpture, which finds no parallel in Byzantium, suggests that the practice of architectural model-making, for whatever purpose, was a familiar concept in the Caucasus.

Trdat's use of drawings may also be situated within a local architectural tradition, as demonstrated in the Armenian church of Gagkashen, an early eleventh-century church attributed to the architect.[32] The structure, as is attested by Taronetsi, is built in imitation of the Armenian seventh-century church of Zvartnots.[33] Both monuments are in ruins;

Christina Maranci, "Architectural Models in the Caucasus: Problems of Form, Function, and Meaning," *Architectural Models in Medieval Architecture*, ed. Yannis D. Varalis (Thessaloniki: University Studio Press, 2008), pp. 46-52.

[30] This reliquary rests on a lintel above the entrance to the southeast side chapel of the main church. Its presence is particularly interesting since the building has been attributed, albeit tentatively, to Trdat.

[31] See the related discussion of Ousterhout, *Master Builders*, p. 70, regarding the plan at Korogo.

[32] In three copies of Taronetsi's manuscript, the account of the building of Gagkashen is written under the heading: "On the Construction by King Gagik of the Church called Saint Gregory in the town of Ani. The master of the church is Trdat." Although it is possible that this is simply a later invention (at least one of the manuscripts dates to the sixteenth century), there is good reason to believe it accurate: Trdat's oeuvre, which includes commissions by both King Smbat II and the wife of King Gagik I, Queen Katranide, seems to establish him as a "court architect" of the Bagratunis of Ani in the late tenth and early eleventh century. Having just completed the cathedral of Ani for Queen Katranide, it is not improbable that he was then commissioned to construct a second church.

[33] Sources for Zvartnots include Toros Toramanyan, *Zvartnots-Gagkashen* (Erevan: "Sovetakan Grogh" 1984); Tiran Marutyan, *Zvartnots ev zvartnotsatip tacharner*

however, even in a study of ground plans, the similarity of Gagkashen to its prototype is readily apparent to the modern eye.[34] Gagkashen, like Zvartnots, is a double-aisled tetraconch, formed of a four-lobed inner shell surrounded by a circular outer shell, and supported with a system of columns and piers. Both also share almost precisely the same measurements in overall dimensions and the relationship of components.[35] As Ousterhout has observed, these similarities strongly suggest that Trdat imitated Gagkashen with the aid of a drawing.[36] Additional evidence for the use of plans in both Armenia and Georgia can be adduced: in a recent publication, Armen Ghazarian and Ousterhout brought to light a diagram of a muqarnas vault that was inscribed onto the walls of the thirteenth-century Armenian monastery of Astvatsankal in the region of Talin.[37] At the tenth or eleventh-century Georgian church of Korogo, a pilaster capital represents the donor with what appears to be a plan of the church.[38]

It is relevant that such evidence for the conceptualization of architecture does not seem to find a parallel in contemporary Byzantium. As Ousterhout has argued, Middle Byzantine architects more commonly relied on practical experience rather than theoretical training, a position that is suggested in part by the tenth-century *Poliorcetica*, a mili-

---

[Zvartnots and Churches of the Zvartnots Style] (Erevan: Haypethrat, 1963); Stepan Mnatsakanyan, *Zvartnots* (Erevan: Academy of Sciences, 1971). In Western languages, see W. Eugene Kleinbauer "Zvart'nots and the Origins of Christian Architecture," *Art Bulletin* 53 (1972): 245-62; idem, "The Aisled Tetraconch," Ph.D. diss., Princeton University, 1967; Christina Maranci, "Byzantium through Armenian Eyes: Cultural Appropriation and the Church of Zuart'noc'," *Gesta* 40:2 (2001): 105-24; and most recently, Patrick Donabédian *L'âge d'or dans l'architecture arménienne* (Paris: Parenthesis, 2008), pp. 190-98.

[34] The relationship of the almost identical plans of Zvartnots and Gagkashen presents an important counterexample to prevalent scholarly theories regarding medieval copies. On this issue see Richard Krautheimer, "Introduction to an 'Iconography of Mediaeval Architecture'," *Journal of the Warburg and Courtauld Institutes* 5 (1942): 1-33.

[35] For example, in both cases the exedrae, measured from the center points of the piers, are exactly 15 meters. The diameters of the entire inner core are also equal, measuring 25 meters from the centers of the north and south exedrae.

[36] Ousterhout, *Master Builders of Byzantium*, p. 273n49.

[37] Armen Ghazarian and Robert Ousterhout, "A Muqarnas Drawing from Thirteenth-Century Armenia and the Use of Architectural Drawings during the Middle Ages," *Muqarnas* 18 (2001): 141-54. The term *muqarnas* refers to a three-dimensional vault decoration used primarily in Islamic architecture. It is also referred to as a "stalactite vault."

[38] See Ousterhout, *Master Builders*, p. 70 and fig. 43.

tary treatise on war machines.[39] Its author, Heron of Byzantium, drew from a Roman source but made significant changes to the parent text, removing, for example, the technical vocabulary, which he explains would be unfamiliar to the reader. Heron also redrew the two-dimensional classical diagrams as realistic three-dimensional narrative illustrations, a change, Ousterhout asserts, that suggests his audience was not used to working with diagrams or working drawings.

What explains the seemingly divergent approaches to building in Byzantium and the Caucasus? Ousterhout has linked them to differences in building materials: the cut stone masonry of Armenian and Georgian churches would have required more pre-planning than the brick and mortar structures of Byzantium, in which adjustments could be made (and concealed) during the process of construction. At any rate, it is certain that Trdat's use of plans and models may be situated within a regional tradition, and hence it is not hard to imagine that his conceptual expertise would have appeared as a particularly appealing credential to his employers, confronted with the repair of an architectural unicum like Hagia Sophia.

A survey of Hagia Sophia itself, however, suggests that a third aspect of his experience was possibly also called into use. Examining closely the cornice of the dome, Emerson and Van Nice noticed a series of engraved setting lines that correspond to the curvature of the dome. In the area of the repair, they noted, there are a series of adjustments to those lines. At the south end of the western arch (to the left) is a circular groove near to the lip of the cornice, concentric to the pendentive below.[40] At the northern end (the right-hand segment) of the western arch, however, there is no such groove; rather, the lip of the cornice is itself concentric with the rim of the pendentive. Based on this lack of uniformity, the scholars suggest that Trdat began at the southern end of the cornice, setting the stones and inscribing on them a curve for the dome above; by the north end, however, he simply designed the cornice itself to indicate the curve of the dome. Hence it appears that Trdat adjusted his methods as he went along.[41]

---

[39] Ibid., pp. 65-66; Denis Sullivan, ed., *The Poliorcetica of Heron of Byzantium: Text, Translation, and Commentary* (Washington, DC: Dumbarton Oaks, 2000); idem, "Originality in the Poliorcetica of 'Heron' of Byzantium," *Byzantine Studies Conference, Abstracts* 18 (1993): 32-33; Carle Wescher, *Poliorcétique des grecs* (Paris: Imprimerie impériale, 1867).

[40] Emerson and Van Nice, "Hagia Sophia, Istanbul," fig. 11.

[41] Emerson and Van Nice, "Hagia Sophia: Second Dome," pp. 167-68.

From the archaeological and textual sources, it may be inferred that Trdat was proficient in the theoretical planning of the repair, while also capable of negotiating with what must have been an unpredictable on-site construction process. In addition to his reputation as a high-level builder in Armenia, some or all of the skills discussed above were evident to his Byzantine employers and quite possibly earned him a supervisory position as master builder (*promaistor*) of the project.[42] What is certain is that his work has endured the test of time—the western segment of the dome has stood now for more than a millennium.

Trdat in Armenia

Trdat was active in Armenia both before and after his repair of Hagia Sophia. He is mentioned in connection to Argina (Arghina; Ergine), a fortified town north of the city of Ani.[43] In the tenth century, Argina became the seat of the catholicos, and several buildings were erected there, including a cathedral. According to the *Universal History*, it was built by Trdat: in an account of the foundation of Ani cathedral, Taronetsi names "the architect [*chartarapet*] Trdat, who constructed the cathedral of Argina."[44] Elsewhere in the text, Taronetsi relates that the Argina cathedral was built in 985 at the behest of Catholicos Khachik (972-92). Hence, it seems that Trdat constructed the monument prior to his travel to Constantinople.

The cathedral, which stood partially ruined since the early twentieth century, collapsed completely in 1966.[45] However, documentary photographs reveal that it was a longitudinal structure without side aisles, and crowned by a dome on pendentives. The exterior was punctuated by pairs of triangular niches that serve to indicate the main divisions of

---

[42] For a discussion of project supervision in the Byzantine world, see Robert Ousterhout, *Master Builders*, pp. 46-49.

[43] The site was in possession of the Armenian Kamsarakan dynasty until the seventh century, when it was conquered by the Persians. In the following century, it passed into the hands of the Bagratids.

[44] *Արկանէ հիմն եւ մեծաշէն եկեղեցւոյն ի նոյն քաղաքին Անիոյ ի ձեռն ճարտարապետին Տրդատայ, որ զկաթողիկոսարանին եկեղեցին շինեաց յԱրկինայ* (Malkhasiants, Stepanos Taronetsi, *Patmutiun Tiezerakan*, ch. 11, p. 187).

[45] The complex at Argina also included the residence of the patriarch. For further discussion of the cathedral, see *Armenian Architecture: A Documented Photo-Archival Collection on Microfiche for the Study of Armenian Architecture* (Zug, Switzerland: Inter Documentation, 1980-1990), vol. 6, fiche A-2200, C7-C8; Josef Strzygowski, *Die Baukunst der Armenier und Europa*, pp. 194, 590-91, 699.

the interior, a common feature of Armenian and Georgian architecture. On the inside, the longitudinal space is divided into three separate bays by thick bundled piers, which at their summit form rib-arches for the vaults. In the central bay, the arches are slightly pointed and once provided support for the pendentives, drum, and dome. The semi-circular apse at the east is flanked by two small side chapels, and the triumphal arch over the apse is articulated by a series of three ribs supported on bundled shafts.[46] Such rich profiling gives the interior a strikingly muscular effect and an emphasis on linearity which anticipates Trdat's work at the cathedral of Ani.

Probably owing to such a high-status commission, Trdat was hired by King Smbat II in 989 to build the cathedral of the city of Ani (Figs. 4-5).[47] According to an inscription on the south wall, construction on the cathedral was interrupted by the death of Smbat in 989, subsequently resumed by Queen Katranide, the wife of Smbat's brother and successor, Gagik I, and was concluded in 1001. How much of the building was completed at the time of Smbat's death is a matter of debate.[48] Moreover, it is not known under what circumstances Trdat left the project and traveled to Constantinople. Further research may shed light on this confusing swirl of events.

For the present purpose, however, it is more important to observe the physical features of the structure. Currently in a precarious condition, the cathedral employs, in its general outlines, the form of earlier, seventh-century domed basilicas in Armenia.[49] Constructed in rubble masonry, the monument once bore a dome with a conical roof, which was still extant in the nineteenth century.[50] Supported on pendentives, it stood atop the intersection of four barrel vaults elevated to a cruci-

---

[46] Surviving decoration includes the sculpture of the pier capitals, which were decorated with interlace sculpture typical of the period.

[47] It is rivaled in fame perhaps only by the palace chapel of Aghtamar on Lake Van, which also dates to the latter tenth century. For the most recent discussion and bibliography, see Lynn Jones, *Between Byzantium and Islam: Aght'amar and the Visual Construction of Medieval Armenian Rulership* (Hampshire, England, and Burlington, VT: Ashgate, 2007).

[48] The construction period may have extended until 1010. For a summary of the positions on this debate and an argument for its conclusion (which is generally accepted) in 1001, see Tiran Marutyan, "When Was Ani Cathedral Constructed?" *Armenian Review* 43:4 (1990): 95-110.

[49] At present, the northwest corner and the northern wall until the cross arm have collapsed, leaving the rest of the monument in imminent danger of destruction.

[50] See *Armenian Architecture*, vol. 6, A-2161, B1-B3.

form design and topped with gabled roofs. On the interior, four massive, free-standing piers divide the space into three aisles, the nave of which terminates in an eastern apse flanked by two-storey side chapels. At Ani cathedral, Trdat introduced a number of innovations to the architectural scheme of the early medieval domed basilica. As at Argina, the vaulting is articulated by a series of pointed rib-arches which spring from profiled piers. However, at Ani these supports appear thinner and endow the interior with sinuous elegance echoed by the slender blind arcades of the exterior walls (Figs. 6-7). Another departure from seventh-century architecture, which has been observed by many scholars, is the enlarged space under the dome. Although the structure bears the same general layout as the domed basilica of Mren (Fig. 8) of circa 640,[51] at Ani the four main piers stand much closer to the lateral walls, so that the ratio of the width of the side aisle to the domed area is roughly 1:2. At Mren, these widths are almost equal.

It is generally believed that Trdat commenced work on the church of Gagkashen (Fig. 9), donated by King Gagik (Fig. 10) and also located in Ani, after his construction of the cathedral, from circa 1001 to 1005.[52] The church was dedicated to Saint Gregory and built, as discussed, in imitation of the church of Zvartnots. However, it was not perfectly identical; the engaged half-columns of the four piers project outward more emphatically than at Zvartnots, creating, as at Ani and Argina, a greater sense of the building skeleton. Also, Trdat replaced the apse at Zvartnots, with its solid eastern wall, with a curved, columnar space which opens out into the ambulatory.[53] Finally, the architect decreased the width of the circular outer aisle of the church from 4 meters (taken at the outermost curve of the exedrae) to 2 meters. Hence, as seen at the cathedral of Ani, the layout allots greater space to the central area under the dome. From these monuments, two elements of Trdat's architectural aesthetic are suggested: first, linearity created by

---

[51] See Mango, *Byzantine Architecture*, p 106, fig.150.

[52] For the church of Gagkashen, and particularly its relation to Zvartnots, see Donabédian, *L'âge d'or dans l'architecture arménienne*, pp. 201-03; Toramanyan, *Zvartnots-Gagkashen*; Kleinbauer, "Zvart'nots," pp. 254-56; Thierry and Donabédian, *L'art arménien*, p. 485.

[53] One may argue that the apse of Zvartnots was in fact also an exedra and that the solid eastern curvature, which is all that remains of the eastern conch, served as a high pedestal for a series of columns, as is seen at virtually all other aisled tetraconchs in the Caucasus. Still, it may also be argued that the pedestal itself, rising several feet, served to create an eastern enclosure unlike what one finds at Gagkashen.

the profiling of the supports and arches, and second, larger central spaces.[54]

A Comparative Study

Having surveyed the projects of Trdat in Constantinople and Armenia, it is important to consider whether his experiences in one tradition shaped his involvement in the other. It is difficult to imagine how Trdat would have remained unaffected by the interior of Hagia Sophia, which has awed visitors from the sixth century to the present, and how an architect, working on high platforms within the church, could not have been inspired by what contemporaries called the "dome of heaven." In this light, one might perceive the new larger proportions of the central areas at the cathedral of Ani and the church of Gagkashen as a reflection of Trdat's memory of the vast continuous spaces of Hagia Sophia.[55] The new open eastern exedrae at Gagkashen may also be construed as a response to Hagia Sophia, whose inner core is obstructed nowhere by solid wall but rather screened by piers, columns, and exedrae.

Conversely, it is unlikely that Trdat discarded his experience with Armenian architecture when he stepped into Hagia Sophia. His arch, which Emerson and Van Nice describe as "extravagantly thickened,"[56] makes more sense when understood from the world of its maker, for Armenian buildings were typically more massive, with thicker walls, lower profiles, and fewer windows than their Byzantine counterparts. Perhaps it is for this reason that Trdat decided not only to strengthen the great western arch but also to alter an adjacent part of the surviving sixth-century dome: according to the archaeologists, the architect filled in two pairs of windows at either end of his segment.[57] Anxiety about these openings is more comprehensible when one considers that the drum windows of tenth-century and eleventh-century Armenian churches, such as the Church of the Holy Savior in Ani, were quite narrow and often alternatingly blind.[58] Finally, the cornice at Hagia Sophia may also refer to Armenian building practices. While the north,

---

[54] See, for example, the comments of Der Nersessian, *L'art arménien*, p. 101.

[55] In the case of Ani cathedral, this hypothesis must remain extremely tentative, since it is not known how much was built before Trdat went to Constantinople.

[56] Emerson and Van Nice, "Hagia Sophia, Istanbul," p. 434.

[57] Ibid.

[58] Der Nersessian, *L'art arménien*, fig. 68.

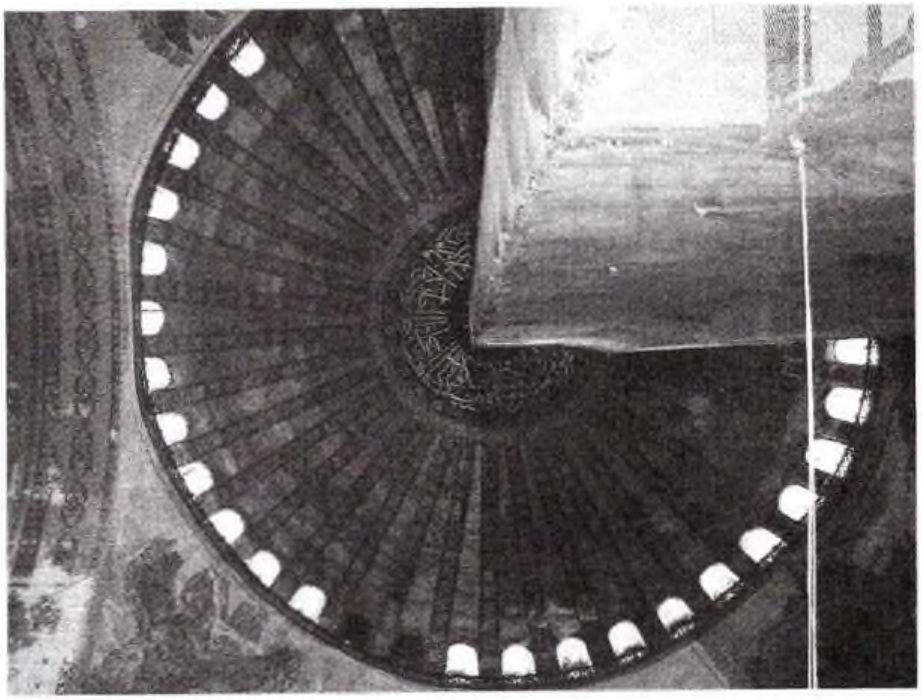
east, and south segments were constructed to slope downwards, Trdat's cornice extends parallel with the ground below. Emerson and Van Nice refer to this feature as "an irregularity,"[59] yet it is standard in medieval Armenian building, as illustrated by the dome cornice of the main church at the tenth-century monastery of Marmashen.[60]

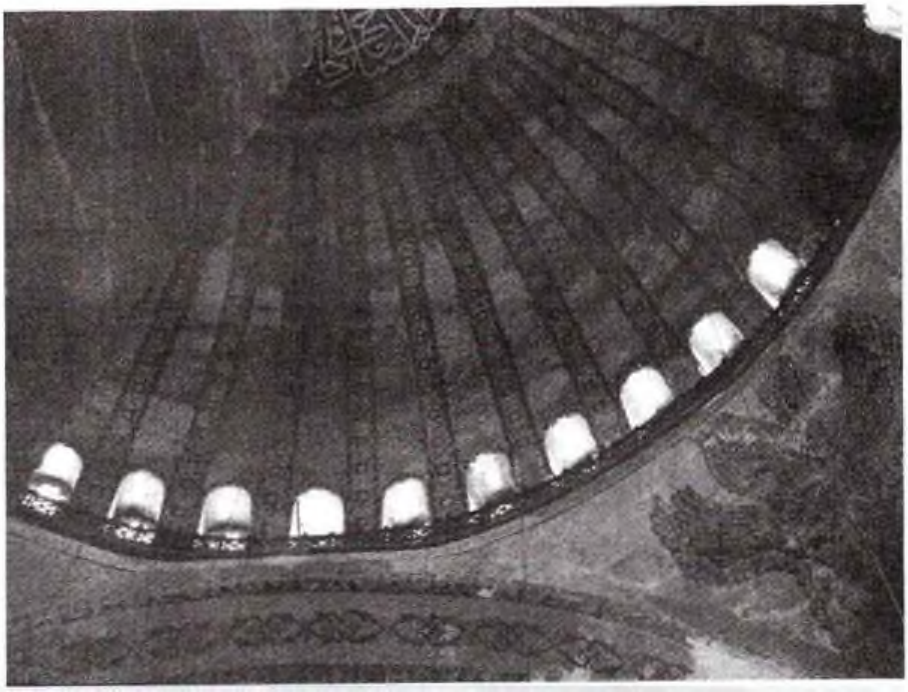
In the final analysis, it is the great disparity in Trdat's Byzantine and Armenian work that stands out. The Hagia Sophia, after all, was not rebuilt with a conical roof, nor was the cathedral of Ani constructed of bricks and mortar. This divergence in Trdat's works is one of the most important and intriguing aspects about him. One wonders how he negotiated between two very different professional and technological milieus, how he interacted with Greek-speaking builders, and how he was regarded by them. Such questions raise fundamental issues regarding identity in tenth and eleventh century Byzantium and the Caucasus. With further study, Trdat's career may shed light on such problems.

[59] See Emerson and Van Nice, "Hagia Sophia: Second Dome," p. 167.

[60] Although the monument is mentioned in all the previously-cited surveys of Armenian architecture, the only monograph is by Gaiane Casnati and Maria Mimmo, *La Chiesa di Marmashen: Un progetto di restauro per l'Armenia* (Milan: Il Centro Studi e Documentazione della Cultura Armena, 1994), esp. fig. 7. It is of interest that the cornice of Ani cathedral is built, unusually, with a stepped profile. Could this be, in turn, a reflection of the sloping cornices of Hagia Sophia?

Fig. 1. Constantinople: Aya Sofia Cathedral





Figs. 2-3. Constantinople: Aya Sofia Dome

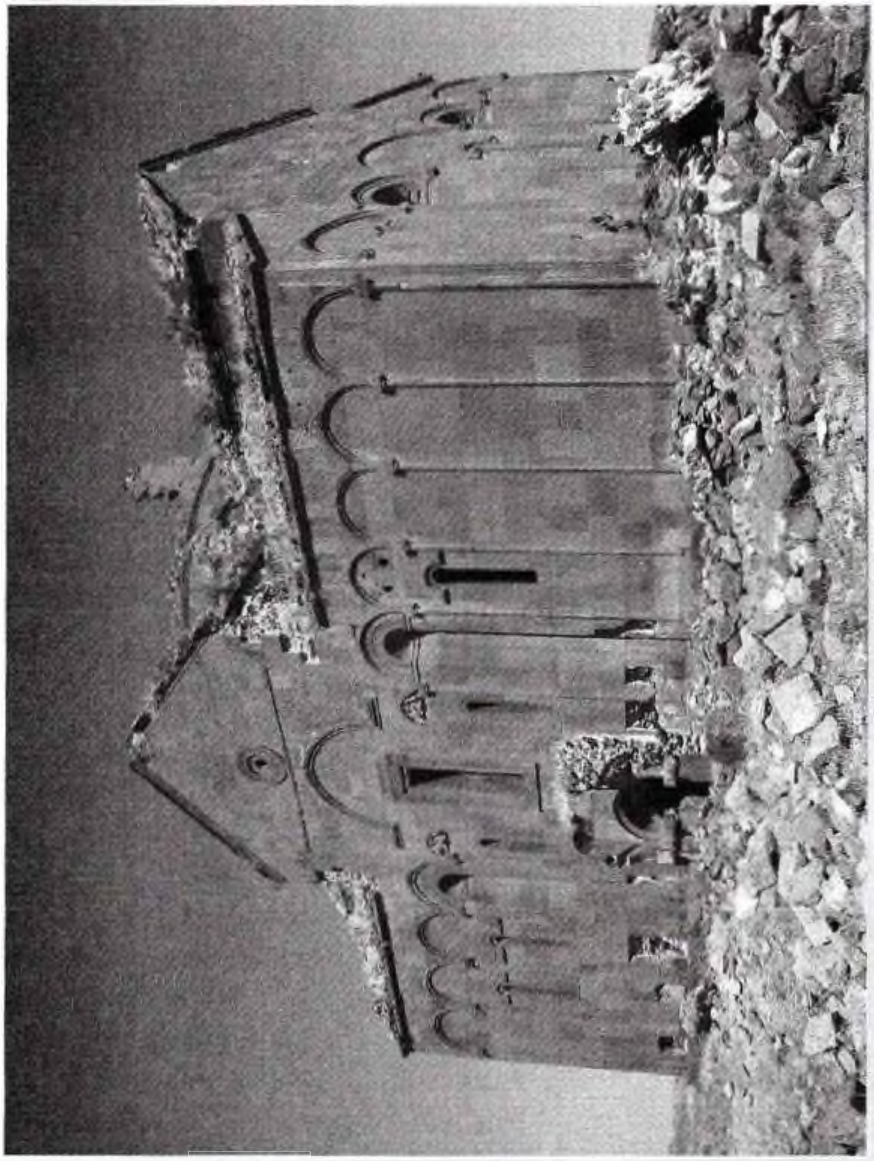


Fig. 4. Ani: Cathedral

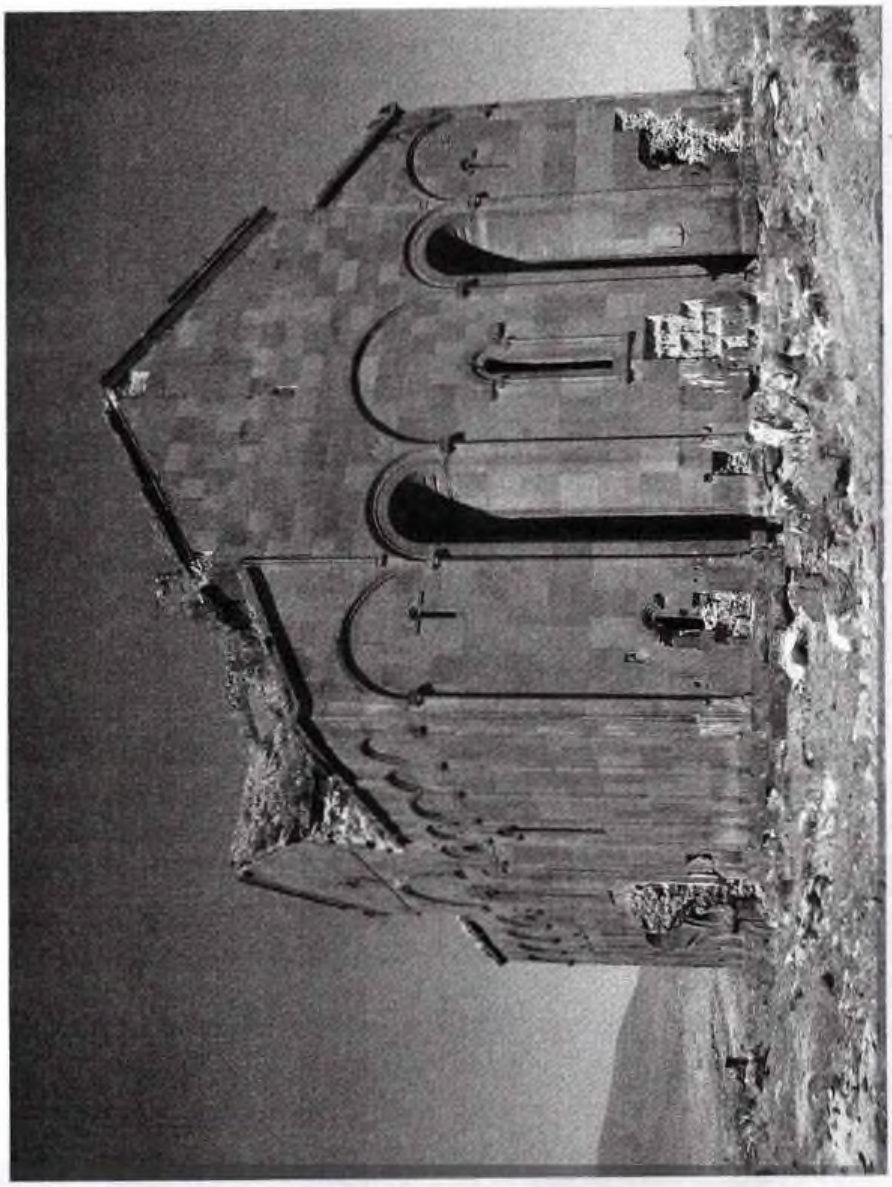


Fig. 5. Cathedral

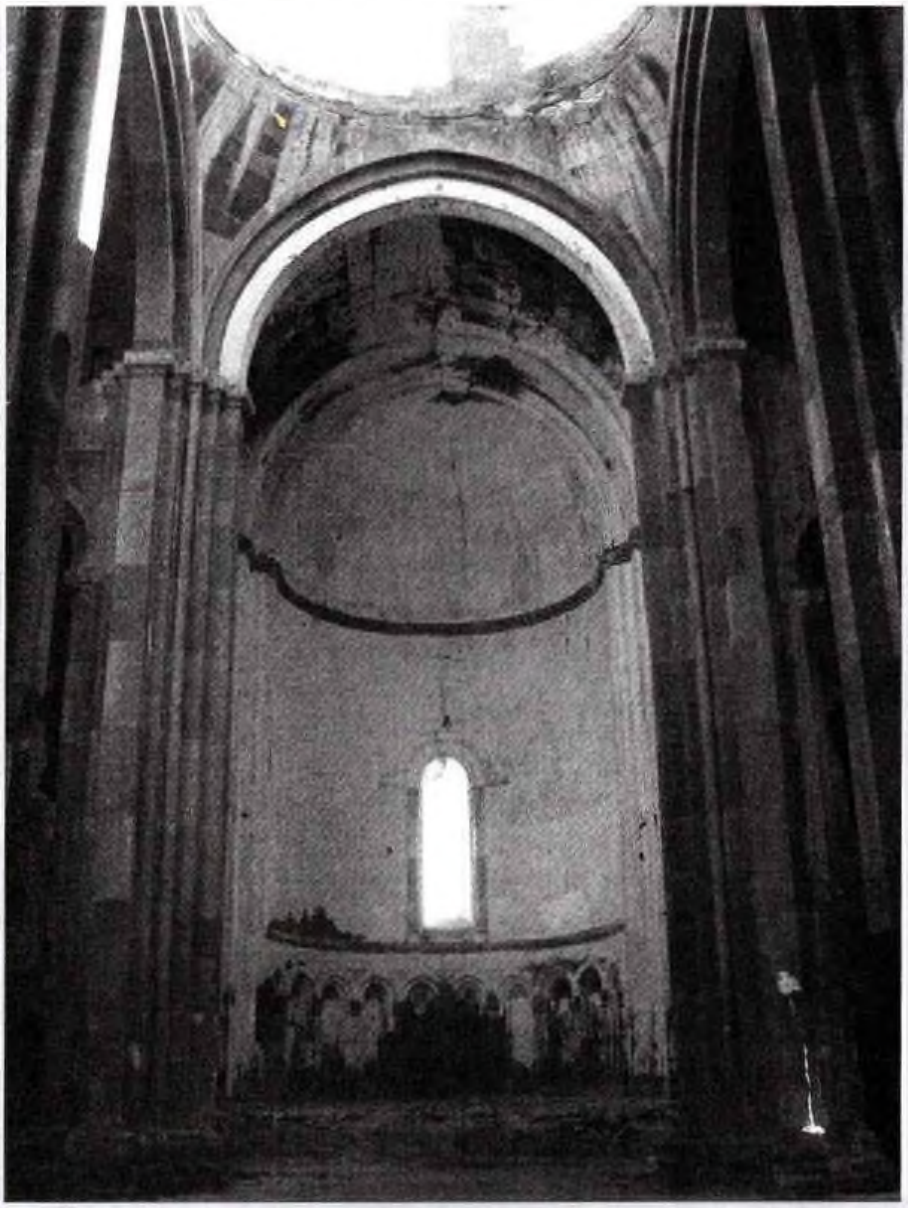


Fig. 6. Cathedral, Interior

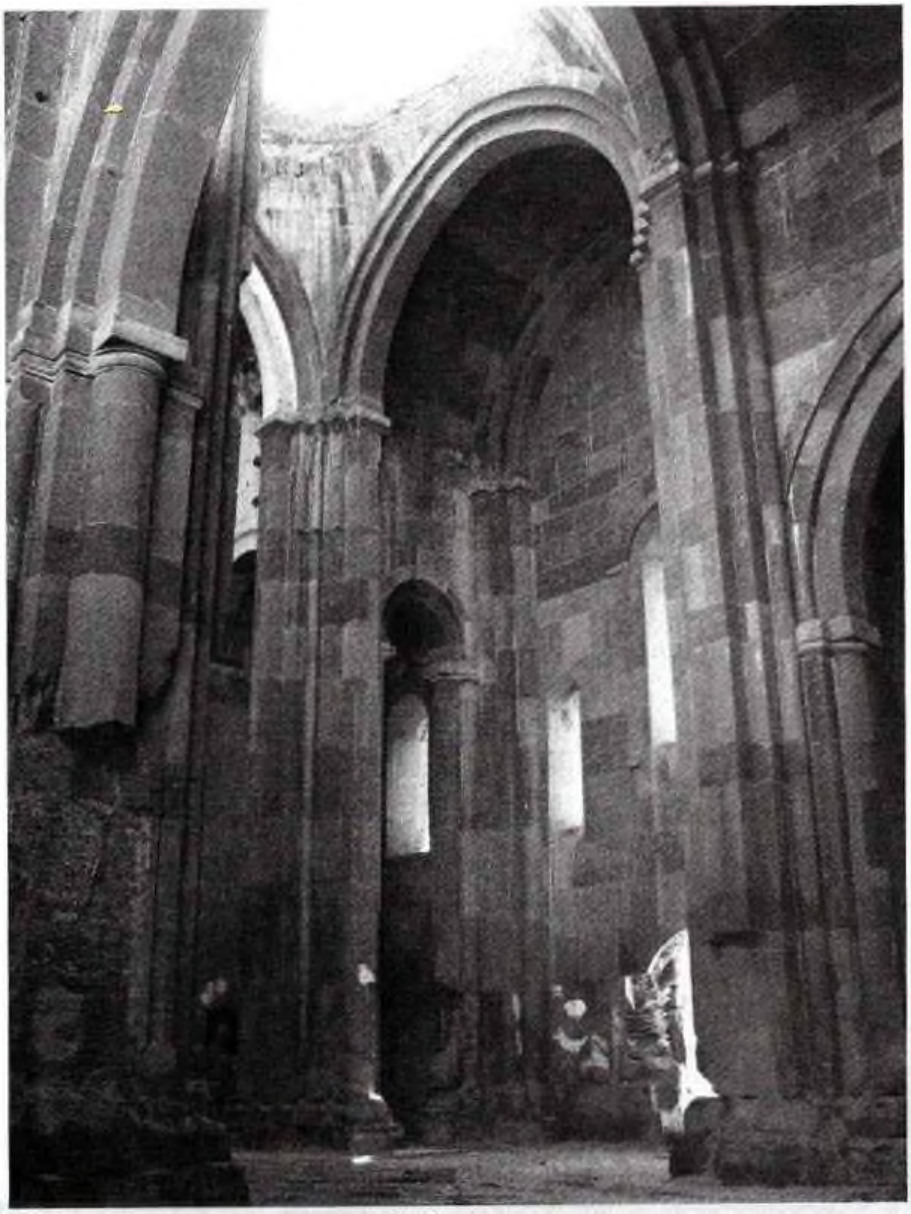


Fig. 7. Cathedral, Interior

Fig. 8. Mren, circa 640

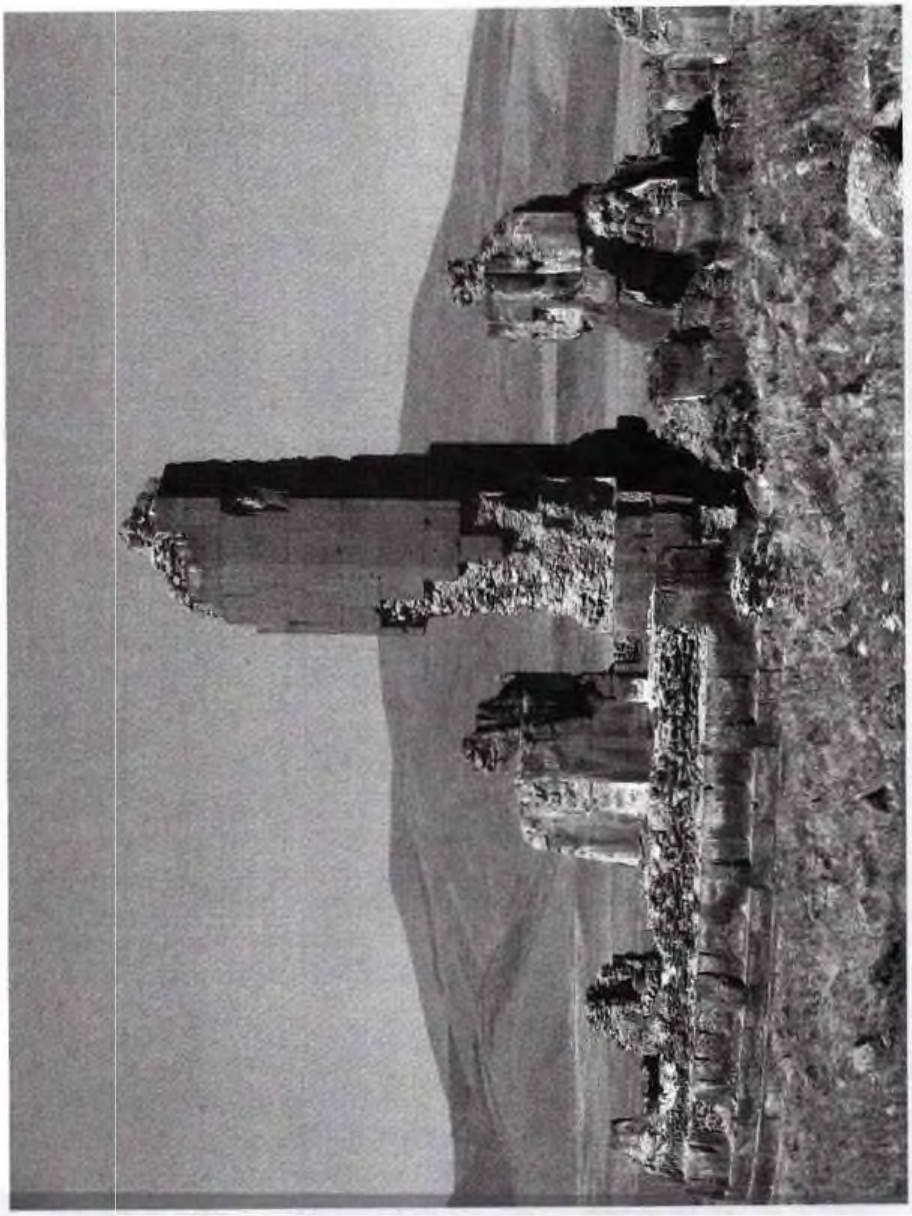


Fig. 9. Ani: Gagkashen, circa 1001-05

Fig. 10. Ani: The Donor, King Gagik I